

## CLAIMS

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is as follows:

- 1        1. A method for manipulating data from any environment in the world to  
2        construct a database that can be used to generate definitions of the user's  
3        physical environment including buildings, terrain and other site  
4        parameters, comprising the steps of:
  - 5                (a) creating and formatting a plurality of objects defining an  
6                environment of floors, walls, partitions, buildings, building complexes or  
7                compounds, terrain, foliage or other sites or obstructions;
  - 8                (b) verifying the sufficiency of said plurality of objects to ensure a  
9                useful definition of said environment and notifying a user of results of said  
10               verification of sufficiency; and
  - 11               (c) generating a set of formatted data in a form transportable to and  
12               usable by an engineering planning model or other application, said set of  
13               formatted data including at least one layer which includes grouped objects  
14               of said plurality of objects.
- 1        2. A method as recited in claim 1, said method further comprising at least  
2        one of the steps:
  - 3                (d) inputting existing data, vectors or drawing objects, said existing  
4                data, vectors or drawing objects either partially or fully describing said  
5                environment; and
  - 6                (e) removing extraneous drawing objects to simplify said definition  
7                of said environment;
- 8               wherein steps (d) and (e) may be performed before or after step (a),  
9        if data exists that fully or partially defines said environment.

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1        3. A method as recited in claim 2, wherein said existing data is in the form  
2        of raster files, or in the form of vector files, wherein said raster files are  
3        selected from the group consisting of Windows Bitmaps (BMP), Joint  
4        Photographic Experts Group format (JPEG), Graphical Interchange Format  
5        (GIF), Tagged-Image File Format (TIFF), Targa format (TGA), PICT, and  
6        Postscript, and wherein said vector files are selected from the group  
7        consisting of AutoCAD (DWG), AutoDesk (DXF), AutoDesk (DWF) and  
8        Windows MetaFile (WMF).

1        4. A method as recited in claim 1, said method further comprising the step  
2        of rendering a three-dimensional view of said environment, wherein said  
3        step of rendering a three-dimensional view may be performed at any time  
4        after at least one of said plurality of objects has been created.

1        5. A method as recited in claim 4, wherein said rendering step includes the  
2        step of selecting a three-dimensional view of a selected perspective of said  
3        environment.

1        6. A method as recited in claim 1, wherein step (a) further comprises the  
2        step of adjusting partition colors, and physical and electrical descriptions  
3        of said partitions.

1        7. A method as recited in claim 1, wherein said formatted data defines said  
2        environment and each said object is associated with at least one of the  
3        group consisting of a specific location in said environment, an attenuation  
4        factor, a color, a height, a surface roughness value, a reflectivity value, an  
5        electrical value, a mechanical value, and an aesthetic value.

1        8. A method as recited in claim 1, wherein step (b) automatically prompts  
2        a user to verify that each piece of necessary information to define said

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3 environment has been added to said definition of said environment before  
4 executing the verification of said each piece of necessary information, and  
5 if said user answers in the negative, prompts said user to enter missing  
6 information before proceeding.

1 9. A method as recited in claim 1, wherein said formatted data comprises  
2 at least one vectorized drawing of said environment.

1 10. The method as recited in claim 1 further comprising the step of  
2 simultaneously converting said grouped objects in said at least one layer to  
3 a selected category.

1 11. The method as recited in claim 1 further comprising the step of  
2 simultaneously designating dimensions of said grouped objects in said at  
3 least one layer.

4 12. An apparatus for manipulating data from any environment in the world  
5 to construct a database that can be used to generate definitions of the user's  
6 physical environment including buildings, terrain and other site  
7 parameters, comprising:

8 means for creating and formatting a plurality of objects defining an  
9 environment of floors, walls, partitions, buildings, building complexes or  
10 compounds, terrain, foliage or other sites or obstructions; and

11 means for generating a set of formatted data in a form transportable  
12 to and usable by an engineering planning model or other application, said  
13 set of formatted data including at least one layer which includes grouped  
14 objects of said plurality of objects.